Enterprise Integration Using Simulation Based Acquisition

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ESC/CV

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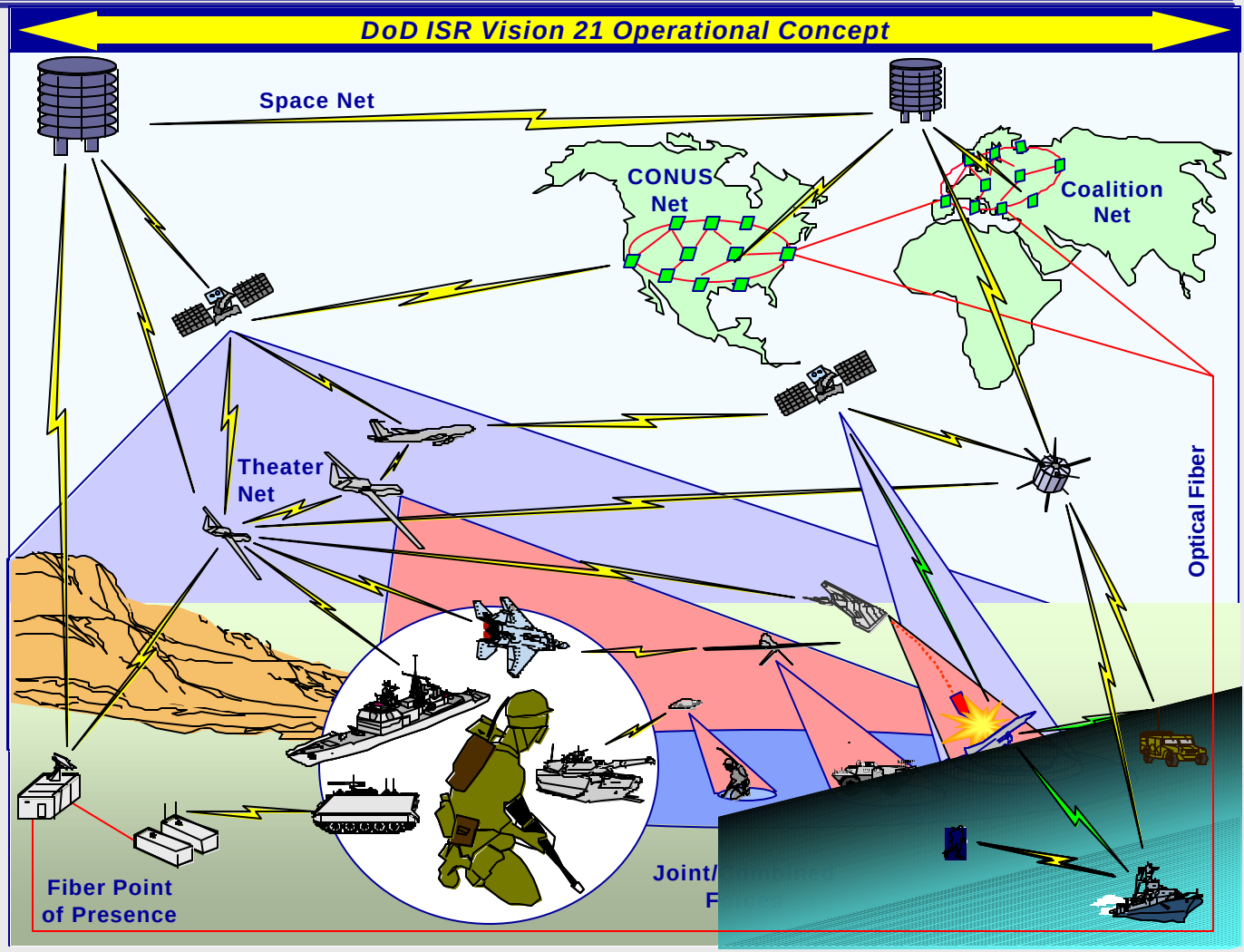
Objectives

- The Challenge
  - Multi-Sensor Command and Control Constellation
- Architectures
- Simulation Based Acquisition
- Enterprise Integration Case Study
  - Link-16 Analysis and Engineering
- Joint Synthetic Battlespace
- Conclusion

The Challenge: System Interoperability & Integration

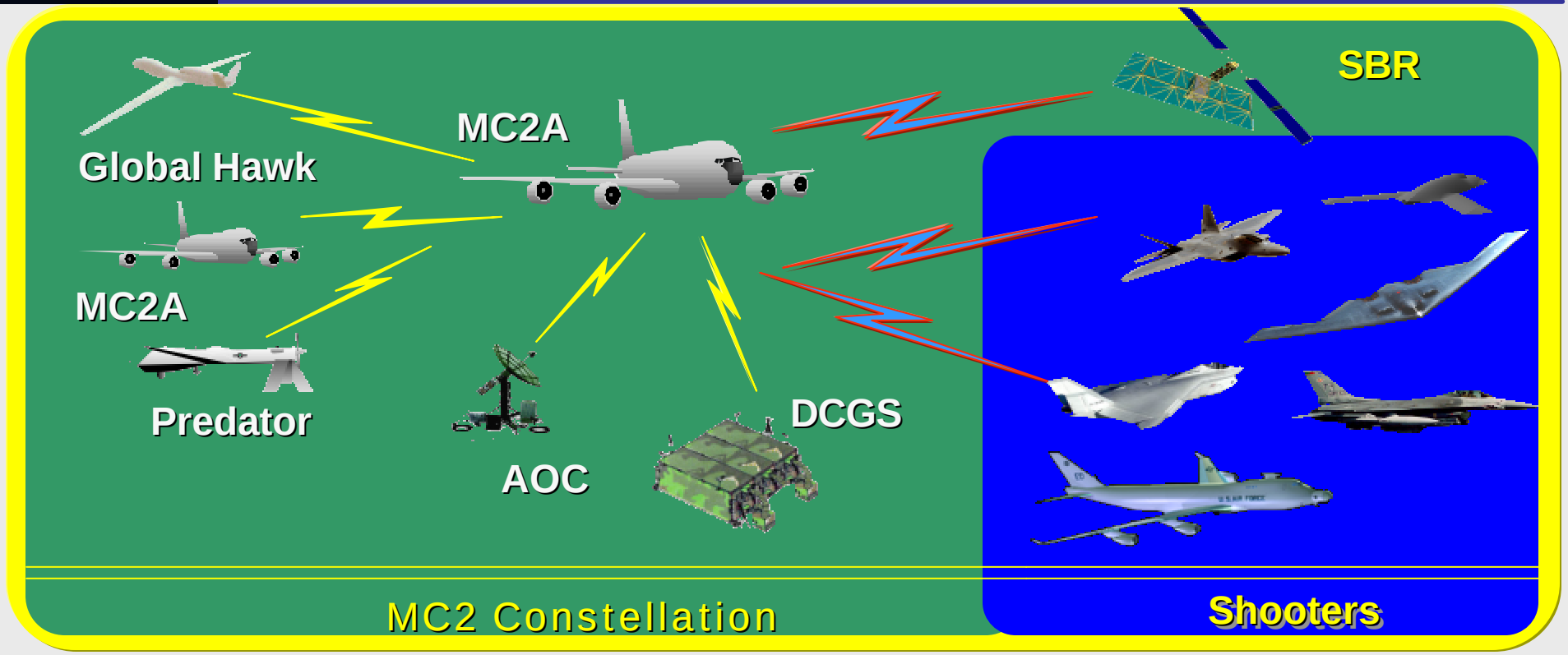
"Integrated and responsive ISR capabilities operating in a collaborative enterprise assuming delivery of timely, relevant information for the NCA and Joint / Combined forces"

Challenge is Getting there!



Source: Intelligence, Surveillance, and Reconnaissance Integrated Capstone Strategic Plan, ASD(C3I), 3 Nov 00

The Multi-Sensor C2 Constellation Approach



- Simulation Enhanced Acquisition
- Technology Enablers
- Legacy Systems Transition

- Industry Involvement Pivotal
  - System of Systems Integrator
  - Teaming Required

Key Enabler for the Global Strike Task Force Concept

Operational Attributes for MC2A

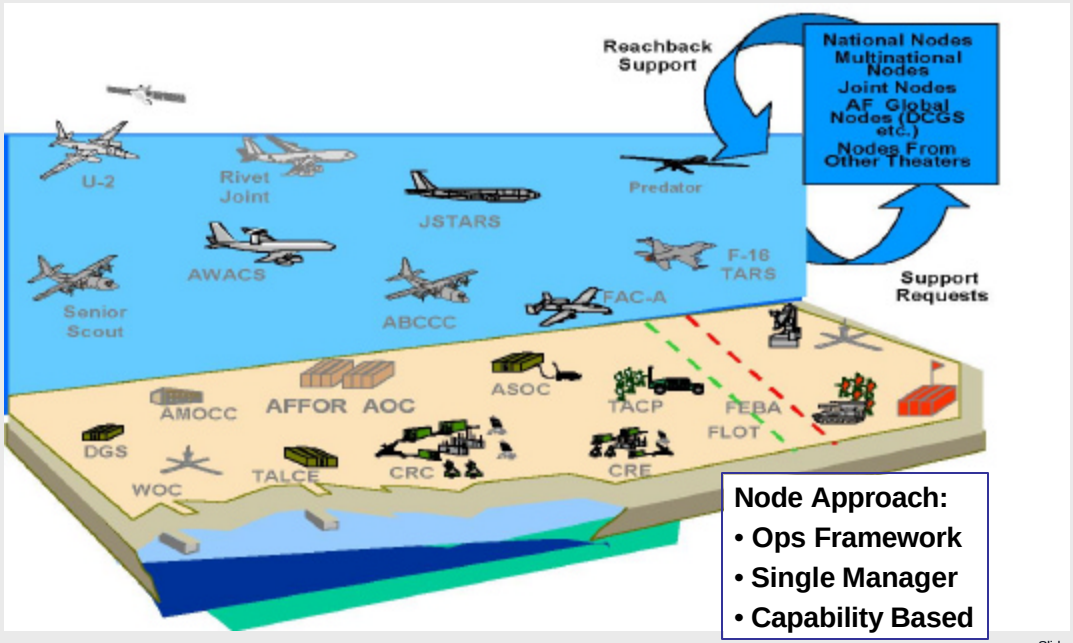
- Air Force
  - MT3C
  - BMTC (Cobra Judy)
  - DCGS
  - MP-RTIP
  - Other
- National
- Other Service
  - Army (ACS, FCS)
  - Navy (AEA, MMA)
  - CG (Deep Water)
  - Other
- Joint
- Coalition

The challenge is to:

- Define / refine the operational “trade space”
- Deliver a set of “enterprise solutions”

“Building it right”
--Enterprise Integration Begins at the Architecture View

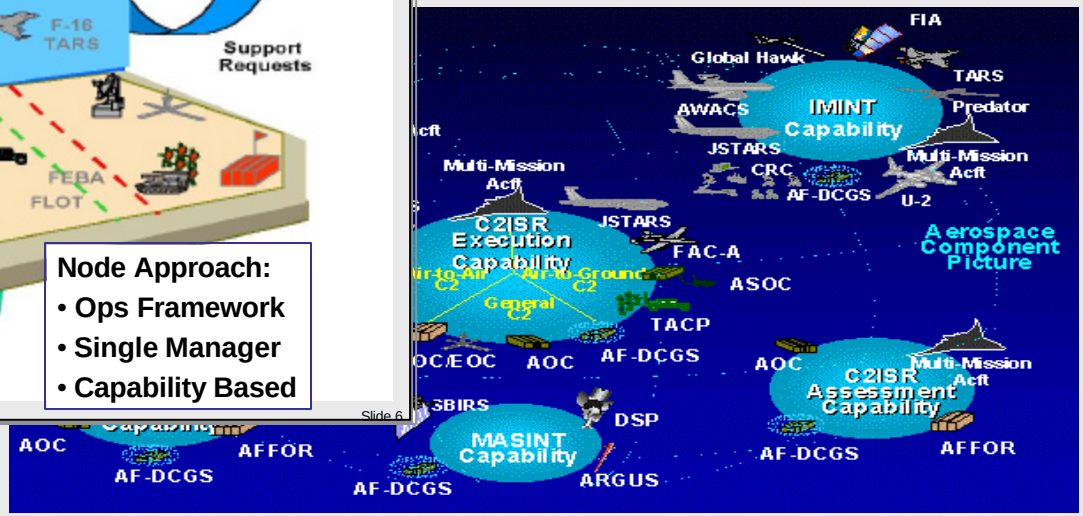
Operational Architecture
—Warfighter View



Node Approach:
- **Ops Framework**
- **Single Manager**
- **Capability Based**

Slide 6

Systems Architecture—
C2ISR Architect’s View



Manage the C2 Enterprise through the nodes.
- Each SPO is responsible for managing their node--AWACS, JSTARS, AOC, etc..
- Integrated Command & Control SPO manages node integration for interoperability.

Slide 7

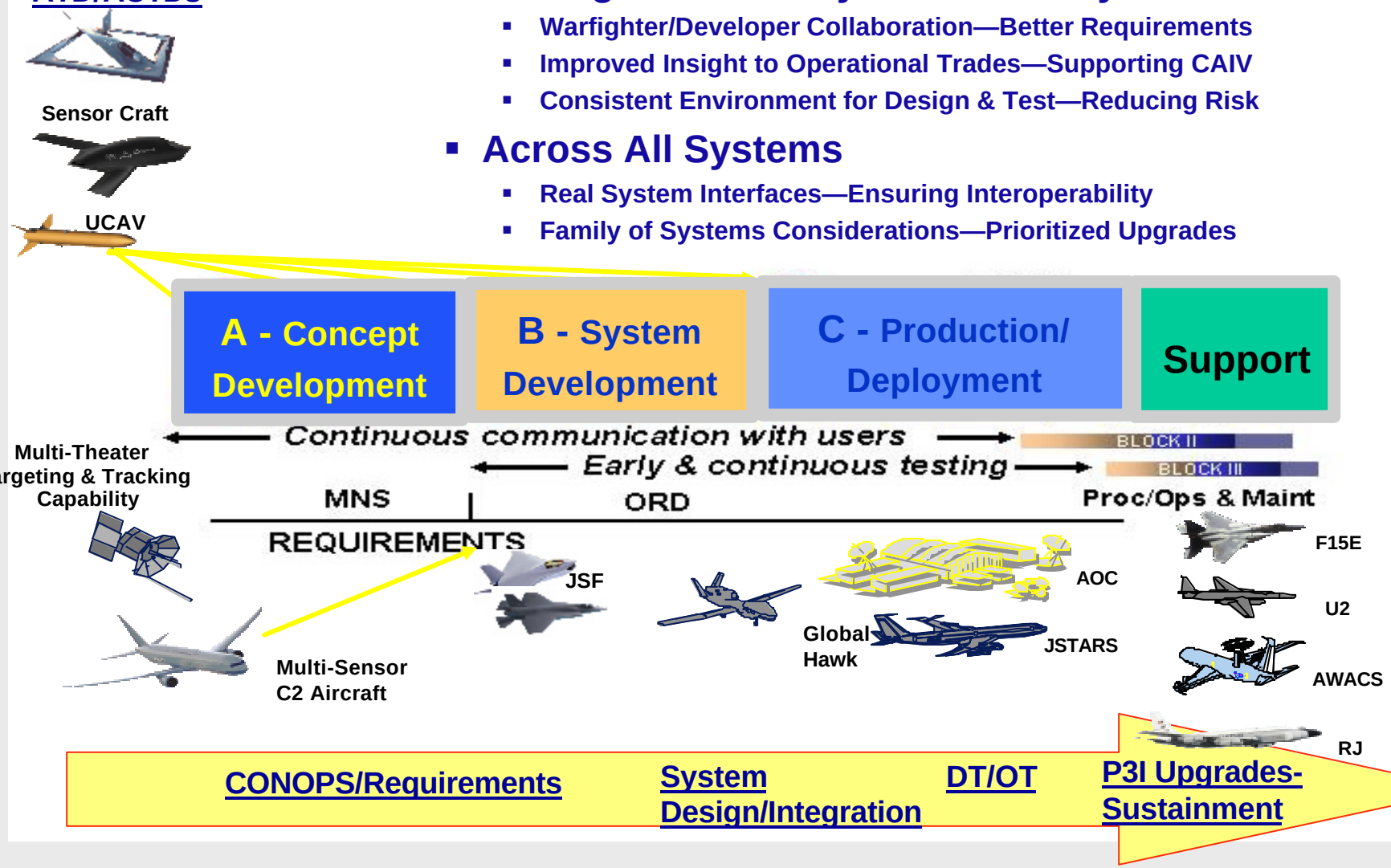
What is SBA?

- A process that enables effective systems integration:
  - Enterprise Management
  - Developmental Planning
  - Capabilities/Effects Based Requirements Development
- An initiative within AFMC to provide with integrated simulations, information technologies and processes to:
  - Place the acquisition activity in the warfighter environment
  - Reduce cost & time developing & sustaining systems
  - Support life cycle product improvement
  - Enable information sharing
  - Enhance product quality

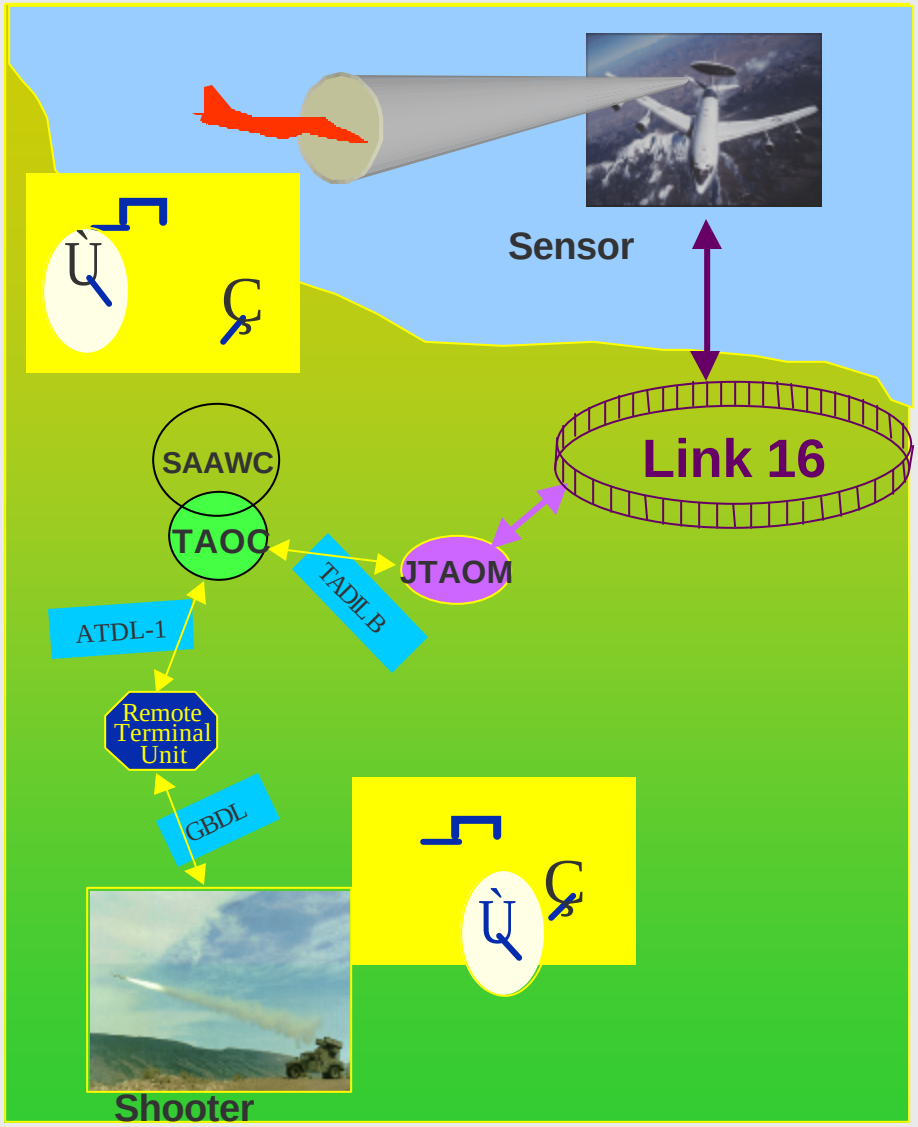
A Better Product to the Warfighter – Faster!

How Should SBA Be Applied?

- **Throughout Each System's Life Cycle**
  - Warfighter/Developer Collaboration—Better Requirements
  - Improved Insight to Operational Trades—Supporting CAIV
  - Consistent Environment for Design & Test—Reducing Risk
- **Across All Systems**
  - Real System Interfaces—Ensuring Interoperability
  - Family of Systems Considerations—Prioritized Upgrades

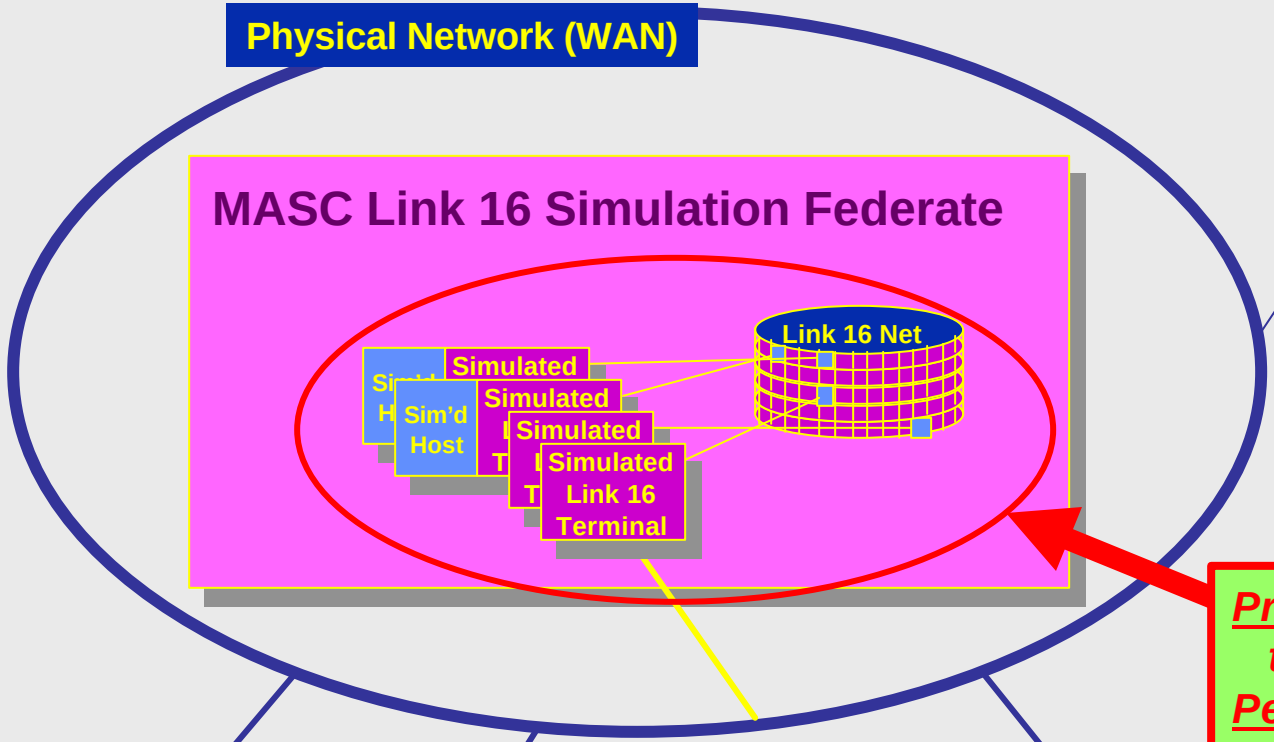


Air Picture on Link 16 -- Today's Reality

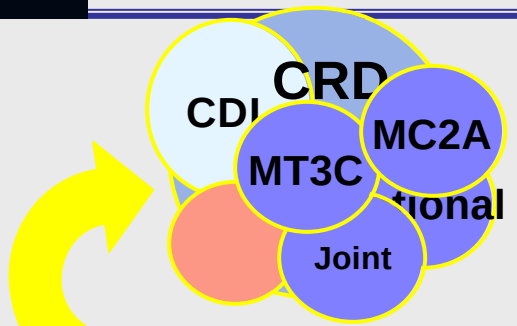


- Erratic tracking
- Dual/multiple track designations
- Misidentifications
- Track ID conflicts
- Frequent track # changes
- Frequent track # swaps
- Reliance on voice deconfliction
- Operator overload

JSF Link 16 M&S Architecture
(Remote Host-to-Terminal Interface)

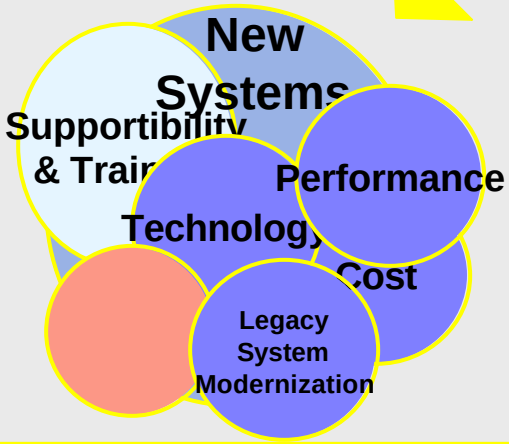


Enterprise Integration
How to Proceed



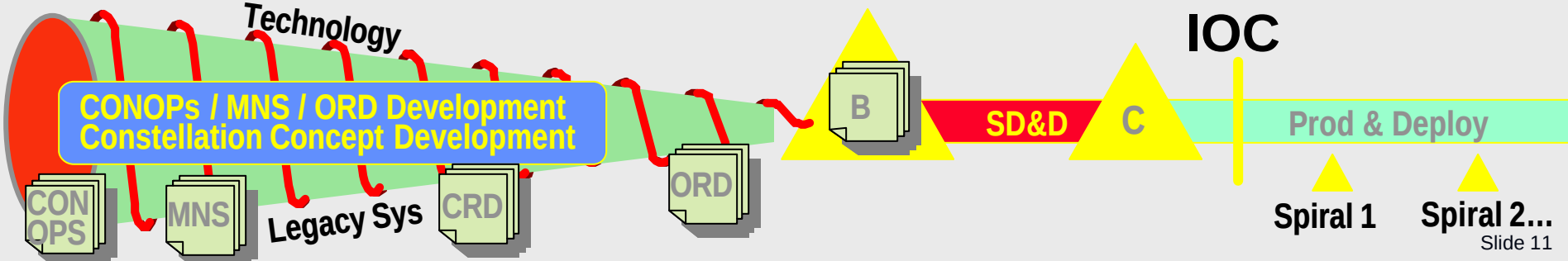
Means
M&S
Mkt Research
Govt / Ind Studies
STA & AoA
Products
CRD, ORDs, APB, TEMP, Etc

Iterative Trades

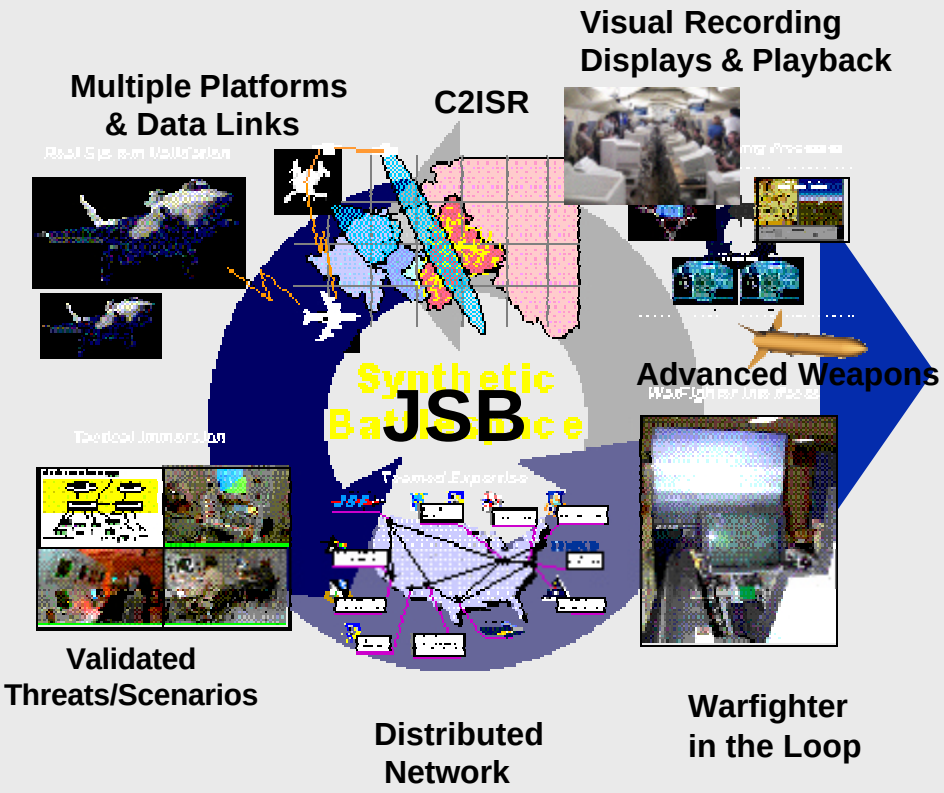


Enterprise Acquisition

- Warfighter needs initiated w/CONOPs
- Provide integrated system of systems
- Driven by req'd operational effects
- Requirements refined iteratively
- Non-traditional acquisition strategy
- Flexible DoD 5000 framework
- Incremental capabilities delivery



Joint Synthetic Battlespace
A Key Element of SBA



WHY?

Tactical and Analytical Realism

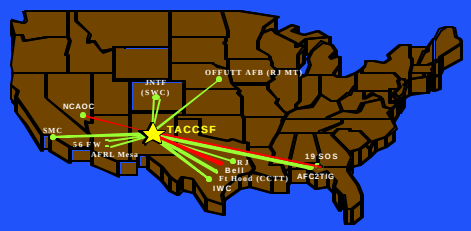
- **WarFighter/Developer Collaboration**
- **Real System Interfaces (HWIL/SWIL)**
- **Improved Insight to Operational Trades**
- **Demonstrate Large Scale Exercises**
- **Interoperability Testing**
- **Family of Systems approach to System Effectiveness**
- **True Industry/Government Partnership**

Levels Playing Field Across the Industry-Government Enterprise

Joint Synthetic Battlespace
Enabling Tool for System Acquisition

- **Immerses the Acquirer in the Warfighter's Environment**
  - Quicker Fielding – Avoid Redesign/Mistakes
  - Cost Avoidance – Total Systems Savings
  - Improved Product – Better Design/Operator Interfaces

WARFIGHTER



- Training
- Mission Rehearsal
- Operations Definition

Joint Synthetic Battlespace

- Repeatable
- Variable Resolution/Fidelity
- Verified/Validated/Trusted
- Distributed or Standalone
- "Corporate" Infrastructure

ACQUISITION

Government Sites

Contractor Sites

- Technology Analysis
- Design Trades
- Systems Engineering
- Integration and Test
- Operational Testing

Conclusion

- The Challenge: Managing A Complex System of Systems and ensuring their Interoperability and Integration
- The Solution: Enterprise Integration using Principles of Simulation Based Acquisition
  - With a firm foundation of the Architectural Perspective grounded in M&S

Enterprise Integration:
Achievable Now & Necessary for the Future